CV for **Hon Ki TSANG,** Fellow of IEEE, Fellow of Optica, C.Eng.

Personal information

Surname: Tsang; Given names: Hon Ki (also published as Hon Tsang, H.K. Tsang, 曾漢奇)
Address: Department of Electronic Engineering, The Chinese University of Hong Kong,
E-mail: hktsang@ee.cuhk.edu.hk; Webpage (URL): **http://www.ee.cuhk.edu.hk/~hktsang**
Place of Birth: Hong Kong.

EDUCATION

1991 PhD University of Cambridge.
Thesis title: "Optical Nonlinearities in Quantum Well Waveguides"
Thesis advisor: Ian H. White (current Vice-Chancellor of University of Bath, UK)
1987 BA Honours, University of Cambridge (awarded MA, Cantab. in 1991)
Engineering part I (for Electrical, Mechanical and Civil Engineering), and
Electrical and Information Sciences Tripos;

Career Summary

2023 - now	Interim Dean, Faculty of Engineering, CUHK
2022-now	Wei Lun Professor of Electronic Engineering, CUHK
2018-2023	Professor and Associate Dean (Research) of Faculty of Engineering, CUHK
2010-16	Chairman, Department of Electronic Engineering, CUHK
2003-now	Professor, CUHK
2001-03	Director, Product Group Head, Bookham Technology plc (Oxfordshire, UK)
1996-2001	Associate Professor, CUHK
1993-1996	Lecturer (academic title of Assistant Professor introduced in 1994), CUHK
1991-1993	SERC Research Fellow, School of Physics, University of Bath (UK)
1990-1990	Visiting Researcher (8 months), Bell Communications Research, (NJ, USA)
1984-1990	Student at University of Cambridge (BA and PhD)
1983-1984	Full time Trainee, GEC Telecommunications plc (Coventry, UK)

Research Activities

Keywords: Silicon Photonics; Optical Communications; Photonic Integrated Circuits; optical waveguides and materials; Optical modulators; hybrid integration; photonic sensors; optical coherence tomography

Tsang's main research contributions have been in the field of silicon photonics, on which he has carried out research for more than two decades. His contributions to this field include the first experimental paper on nonlinear silicon photonics in January 2002, the first high net gain silicon Raman amplifier, the first model of two photon absorption and free carrier absorption in silicon waveguides, the first multimode waveguide grating couplers capable of low-loss selective-launch of different modes in multimode fibers. His most recent works include advances in waveguide grating couplers that enabled sub-decibel coupling loss using standard foundry fabrication and photolithography process, and advances in the state-of-the-art for Si modulators to attain one of the highest modulator data rates >300Gb/s. His current research projects are aimed at developing silicon photonics for mode-division-multiplexed communications in multimode fibers, and the development of photonics systems-on-chip for optical coherence tomography and imaging.

Selected Awards and Fellowships

2019 **Fellow of IEEE** for contributions to nonlinear silicon photonics and advanced waveguide grating couplers.

2018 Elected as **Fellow of the Optical Society** (OSA, renamed as OPTICA in 2021) for contributions to nonlinear silicon photonics, sub-wavelength silicon waveguide gratings, and hybrid integration of graphene on silicon waveguides.

2014 Natural Science Scientific Achievement (2nd class) Awards 2014 by the Ministry of Education, Peoples' Republic of China.

2012 Fédération Internationale des Échecs (FIDE): FIDE Master (FM)

2007 The Chinese University of Hong Kong – VC Research Excellence Award

2005 CUHK Young Researcher Award

2003 Bookham Technology plc Inventor's Award

Supervision of Graduate Students

37 research students completed (26 PhDs,11 MPhil). 9 PhD,1 MPhil student current

Recent Invited, Keynote and Plenary talks

"Advances in silicon photonics for high-capacity optical interconnects," **Invited Talk** at European Optical Society Annual Meeting (EOSAM 2023), Dijon, France, September 2023.

"High Q Multimode Racetrack Resonators for integrated Silicon Raman Lasers" **Keynote talk** at Conference on Information Optics and Photonics, Xi'an China, July 2023.

"Silicon Photonics for Spectroscopic Sensing and Imaging," **Plenary Talk** at 9th Asia Pacific Optical Sensors Conference, Tianjin, China, June 2023.

"Recent Progress on Silicon Photonics for High-Capacity Optical Fiber Interconnects" **Invited talk** at CLEO, San Jose, CA USA, May 2023.

RESEARCH GRANTS

Total external grant funding: $90,622,249; Grants from RGC/ITC as PI $64,894,238; funding as Co-investigator: HK$19,858,044; Funding from industry:HK$5,909,607

Current Research Grants as Principal Investigator/Project Coordinator:

Project Ref	Title	HK$	Start date	End date
RGC GRF 14205623	Coherent Microresonator Networks for Reconfigurable Photonic Integrated Circuits	1,017,450	1/1/2024	31/12/26
ITF platform ITS/226/21FP	Silicon Photonics for Terabit/s Multimode Optical Fiber Interconnects	10,959,381	01-08-22	31-07-24
RGC/NSFC N_CUHK423/21	Hybrid Integration of Layered Group Ten Transition Metal Dichalcogenides on Planar Waveguides for Long Wavelength Optical Communications	1,171,334	01-01-22	31-12-25
RGC GRF 14207021	Resonance-Enhanced Waveguide Grating Couplers for Wideband High Capacity CWDM Transceivers	838,396	01-01-22	31-12-24
ITF midstream MRP/066/20	Integrated Spectrometer for Dynamic Optical Coherence Tomography	4,998,739	01-01-21	31-12-23
RGC GRF 14203620	Multimode Waveguide Grating Coupler	845,055	01-01-21	31-12-23

Classroom Teaching (2023-24)

ELEG4312 Microoptic Devices and Systems

ELEG5301 Photonic Integrated Circuit

Administrative and Professional Service

(bold indicate appointments still current in 2022/23)

- **Interim Dean, Faculty of Engineering** (August 2023 -)
- Associate Dean (Research), Faculty of Engineering (August 2018 to July 2023)
- **Member of Faculty Academic Personnel Committee, (** August 2017-now)
- **Director of Centre of Advanced Research in Photonics,** (2015-now)
- **Member of Faculty Executive Committee 2010-2016 and 2018-2023;** (Chair from August 2023)
- **Member of EE Department Executive Committee** (2018-now)
- **Member of Faculty Board since 2003;** (Chair from August 2023)
- Chair of Department of Electronic Engineering 2010-2016
- **Fellow of Shaw College**, The Chinese University of Hong Kong
- **Elected Member of Board of Trustees**, Shaw College, CUHK
- **Coordinator of CUHK Strategic Research Area on Information/Automation** (2020-now)
- **Member of University Patent Committee** (since 2019)
- Review Panel for Hong Kong Branches of Chinese National Engineering Research Centers
- **Editor-in-Chief of IEEE Journal of Quantum Electronics** (2017-2023) ;*IEEE Journal of Quantum Electronics is the first journal of IEEE LEOS (now renamed as Photonics society) and has been in publication since 1965, publishing the most significant works and many seminal papers in the field of lasers, nonlinear optics, fiber optics and optical communication.*

Member of Advisory Board of IEEE Silicon Photonics Conference (2023-)

Steering committee member of European Conference on Integrated optics 2016-23

TPC member IEEE Photonics Conference 2023

Editorial Advisory Board Member, IEEE "The Institute" (Jan 2016- Dec 2021).

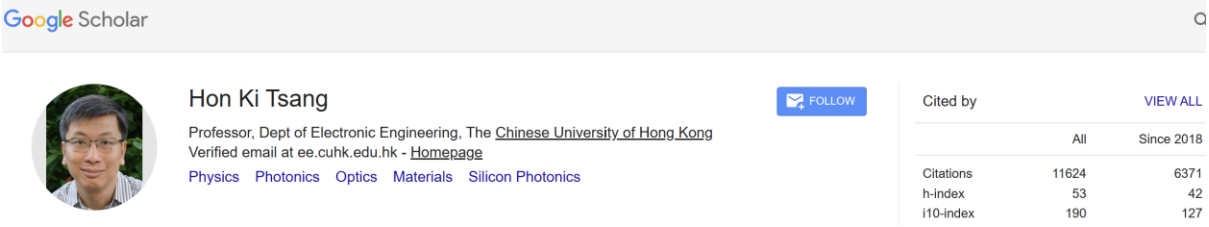
Associate Editor Photonics Research (OSA and CLP joint publication) Aug 2013-June 2018.

Associate Editor Microsystems and Nanoengineering, (Nature Publishing Group), 2016-2020

Publication Metrics and selected papers

Publication metrics: Co-Author of 264 journal and 284 conference papers;

H-index 44 (SCI); 49 (Scopus); 53 (Google), 11,624 citations (Google))



ORCID: https://orcid.org/0000-0003-2777-1537

Scopus: https://www.scopus.com/authid/detail.uri?authorId=57443511300

Google: https://scholar.google.com/citations?hl=en&user=PhSv958AAAAJ

10 Recent open access papers (Authors in **bold** are directly supervised by H.K.Tsang)

- Y. Zheng, C. Zhai, D. Liu, J. Mao, X. Chen, T. Dai, J. Huang, J. Bao, Z. Fu, Y. Tong, **X. Zhou**, Y. Yang, B. Tang, Z. Li, Q. Gong, H. K. Tsang, D. Dai, J. Wang, "Multi-chip multidimensional quantum network with entanglement self-retrieving, ***Science,*** 381 6654 2023, https://www.science.org/doi/10.1126/science.adg9210
- **Dan Yi, X. Zhou** and H.K. Tsang, "Dynamic Control of Distal Spatial Mode Pattern Output from Multimode Fiber using Integrated Coherent Network," in ***IEEE Photonics Journal***, https://ieeexplore.ieee.org/document/10221692, 2023
- **G. Hu, K. Zhong, Y. Qin**, and H. K. Tsang, "Silicon Photonic Integrated Circuit for High-Resolution Multimode Fiber Imaging System," ***APL Photonics*** 8, 046104 https://doi.org/10.1063/5.0137688, 2023.
- **H.Xu, Y. Qin,G. Hu** and H.K.Tsang, " Breaking the resolution-bandwidth limit of chip-scale spectrometry by harnessing a dispersion-engineered photonic molecule" ***Light Science & Applications*** 12, 64, 2023. https://doi.org/10.1038/s41377-023-01102-9
- **Y. Zhang, K. Zhong, X. Zhou**, H.K. Tsang, "Broadband high-Q multimode silicon concentric racetrack resonators for widely tunable Raman lasers," ***Nature Communications*** 13 (1), 3534, https://doi.org/10.1038/s41467-022-31244-0, 2022.
- Y. Xue, Y. Han, **Y. Wang,** J. Li, J. Wang, **Z. Zhang**, X. Cai, H.K. Tsang, K.M. Lau, "High-speed and low dark current silicon-waveguide-coupled III-V photodetectors selectively grown on SOI," ***Optica*** 9 (11), 1219-1226, https://doi.org/10.1364/OPTICA.468129 2022.
- **X. Zhou**, H.K. Tsang, "High efficiency multimode waveguide grating coupler for few-mode fibers," ***IEEE Photonics Journal*** 14 (4), 1-5, 2022.
- **Z. Zhang, Y. Wang**, J. Wang, **D. Yi, D.W.U Chan**, W Yuan, H.K. Tsang, "Integrated scanning spectrometer with a tunable micro-ring resonator and an arrayed waveguide grating," ***Photonics Research*** 10 (5), A74-A81, 2022.
- **D. Yi, Y. Wang**, H.K. Tsang, "Multi-functional photonic processors using coherent network of micro-ring resonators," ***APL Photonics*** 6 (10), 100801, 2021.
- Y. Xue, Y. Han, **Y. Tong**, Z Yan, **Y. Wang, Z. Zhang**, H.K. Tsang, K.M. Lau, "High-performance III-V photodetectors on a monolithic InP/SOI platform," ***Optica*** 8 (9), 1204-1209, 2021. https://doi.org/10.1364/OPTICA.431357

Book Chapter: "Subwavelength Silicon Photonics", Hon Ki Tsang, Xia Chen, Zhenzhou Cheng and Yeyu Yong in Silicon Photonics IV Innovative Frontiers (editors David Lockwood and Lorenzo Pavesi), pp.285-321, Topics in Applied Physics vol. 139, Springer, 2021.

Online talks and Interviews:

Tsang's interview by OSA (2019)

"Bound states in the continuum for photonic integration and InP membranes for heralded single photon generation" SPIE Photonics Europe Strasbourg 2020 (**Invited Talk**, Online Presentation archived at https://doi.org/10.1117/12.2558401) ; Proceedings Volume 11364, Integrated Photonics Platforms: Fundamental Research, Manufacturing and Applications; 113640X, 2020